

Leviathan Biomonitoring TAC Update

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Summary of results of **bioassessment** monitoring of benthic macroinvertebrates through 2010

and contrasts with East Carson River watershed **reference streams** similar to Leviathan/Aspen/Bryant (size, elevation, geology)

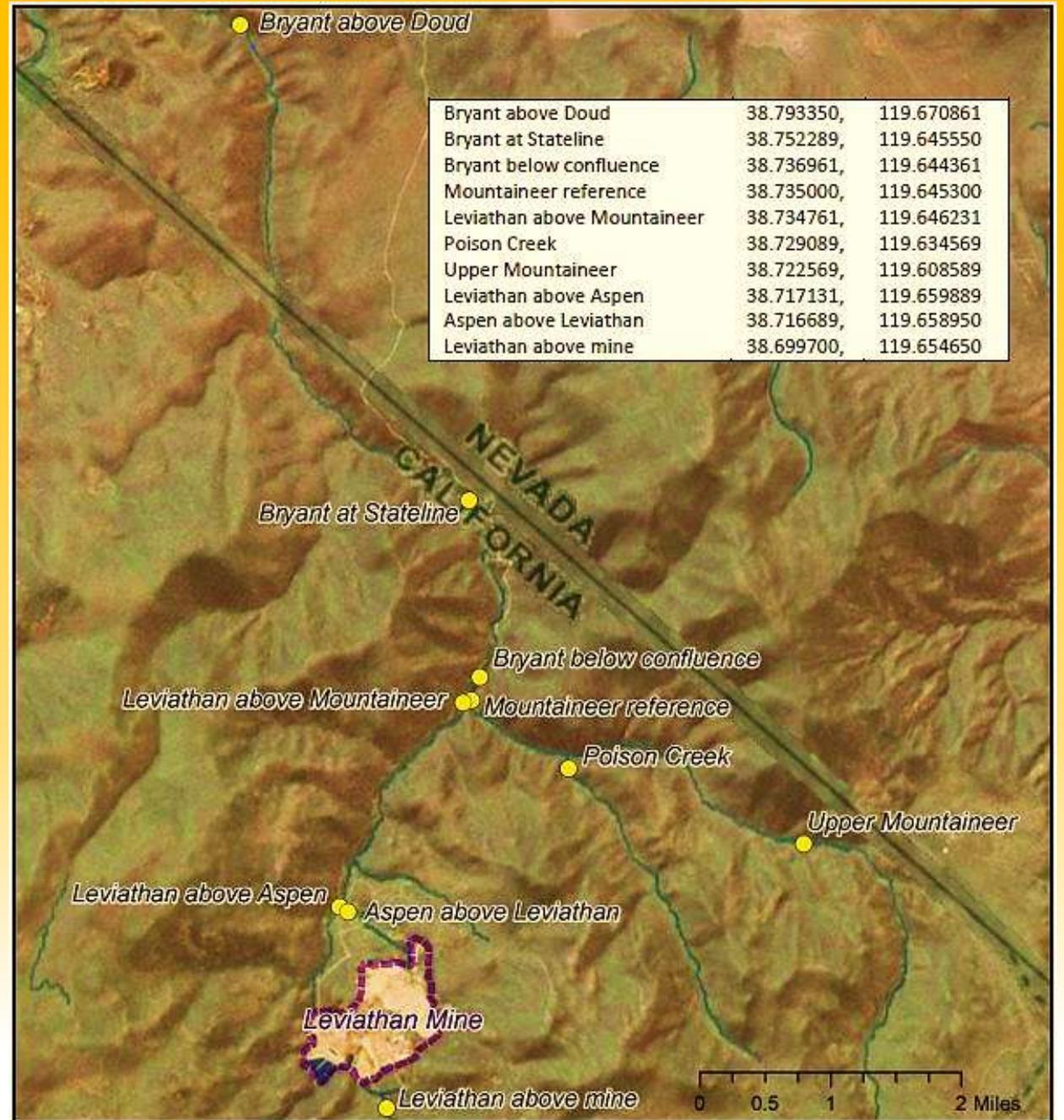
Methods of Data Collection

- **Field sampling: consistent methods over survey period since 1998**
 - 5 replicate samples from riffles, D-frame 250 μ M mesh nets, processed in field to remove debris/sand-gravel/algae, preserved and shipped (field notes, trained & supervised EPA R9 team w periodic field QA)
 - Sampled in late spring (May-June) and in late summer (September) at 6 core intensive sites and usually additional references (E.Carson watershed)
- **Laboratory Procedures and Outcomes:**
 - Subsampled and counts of 250 minimum, IDs to Level 2 SWAMP (genus or species in most cases), including large and rare taxa from remnant sample
 - ERDC, Mississippi - #2-#5 sample replicates sorted and IDed
 - Herbst - #1 of 5 replicates, QCs and specimen verification by photos from ERDC and relation to internal replicate, data compilation and analysis, report preparation, meetings
 - Metrics Used For Analysis – total and mean taxa richness, EPT taxa richness, biotic index (community pollution tolerance), density, dominance, with additional analysis by IBI scores, NMS ordination community similarity

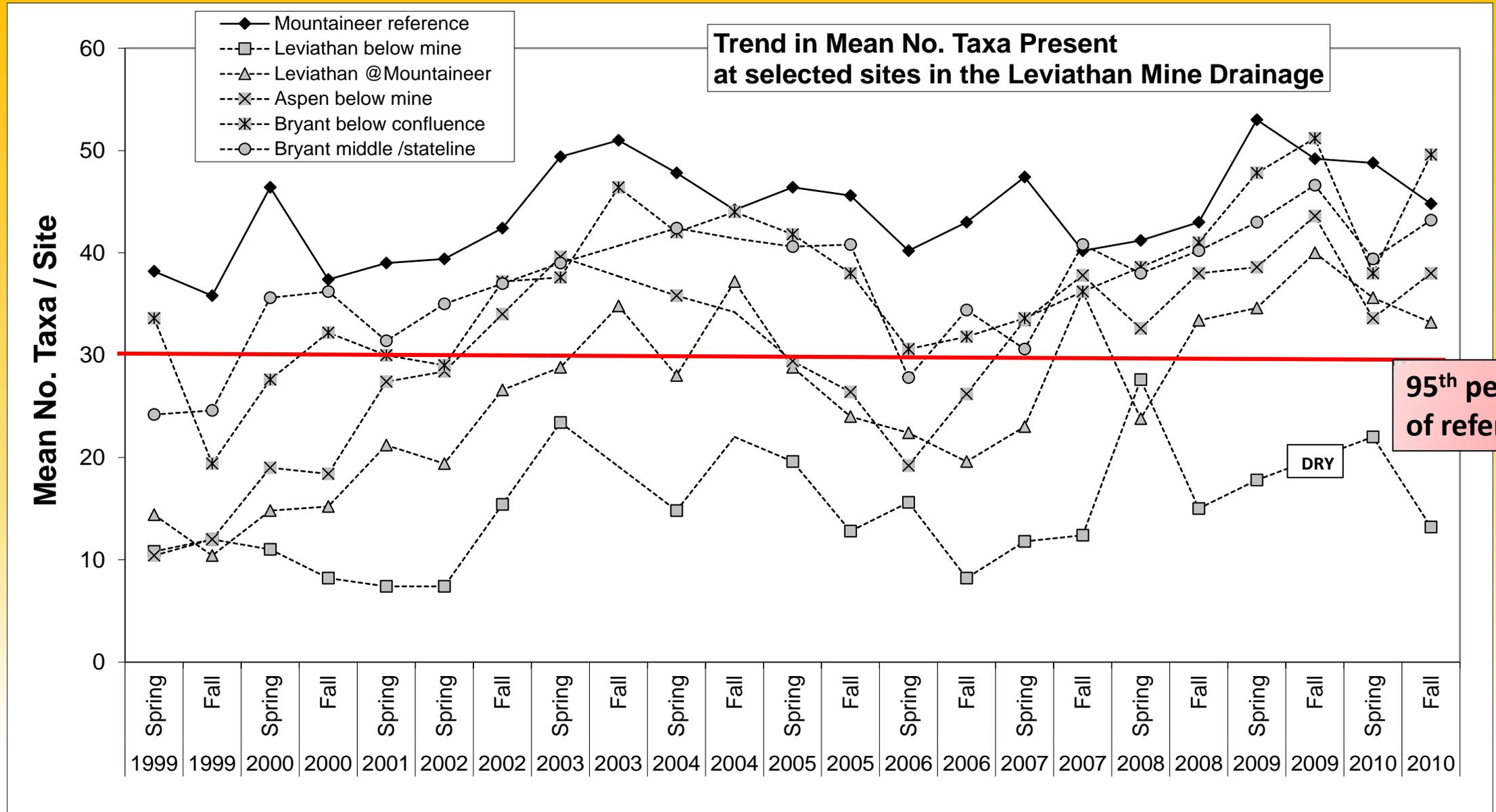
Leviathan and Bryant Creek Watershed 2010 sampling sites

In addition to Mountaineer reference,
other reference / control sites in the
East Carson watershed over time:

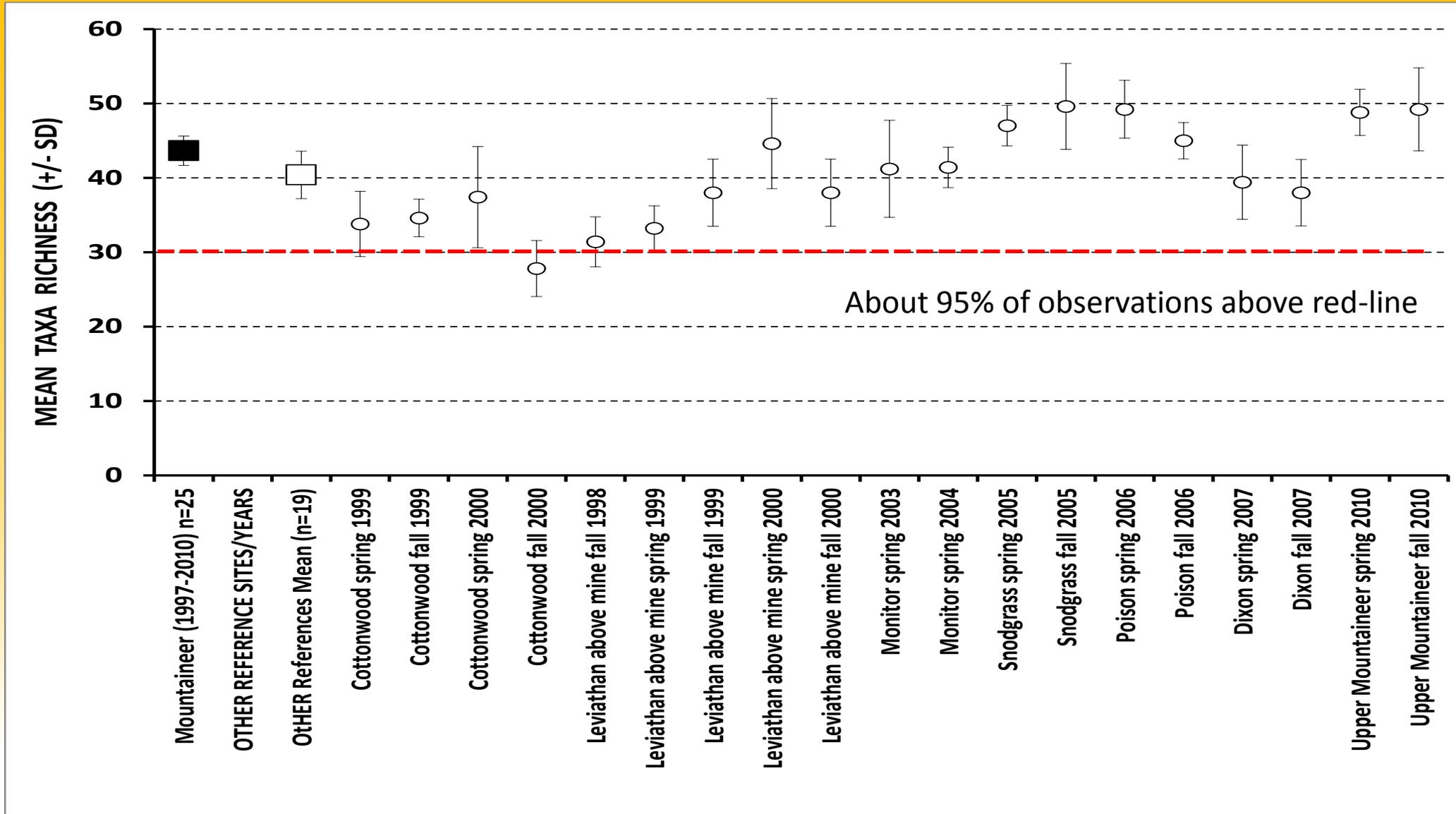
- Cottonwood Crk
- Monitor Crk
- Snodgrass Crk
- Dixon Crk
- Poison Crk
- Leviathan, above mine
- Upper Mountaineer



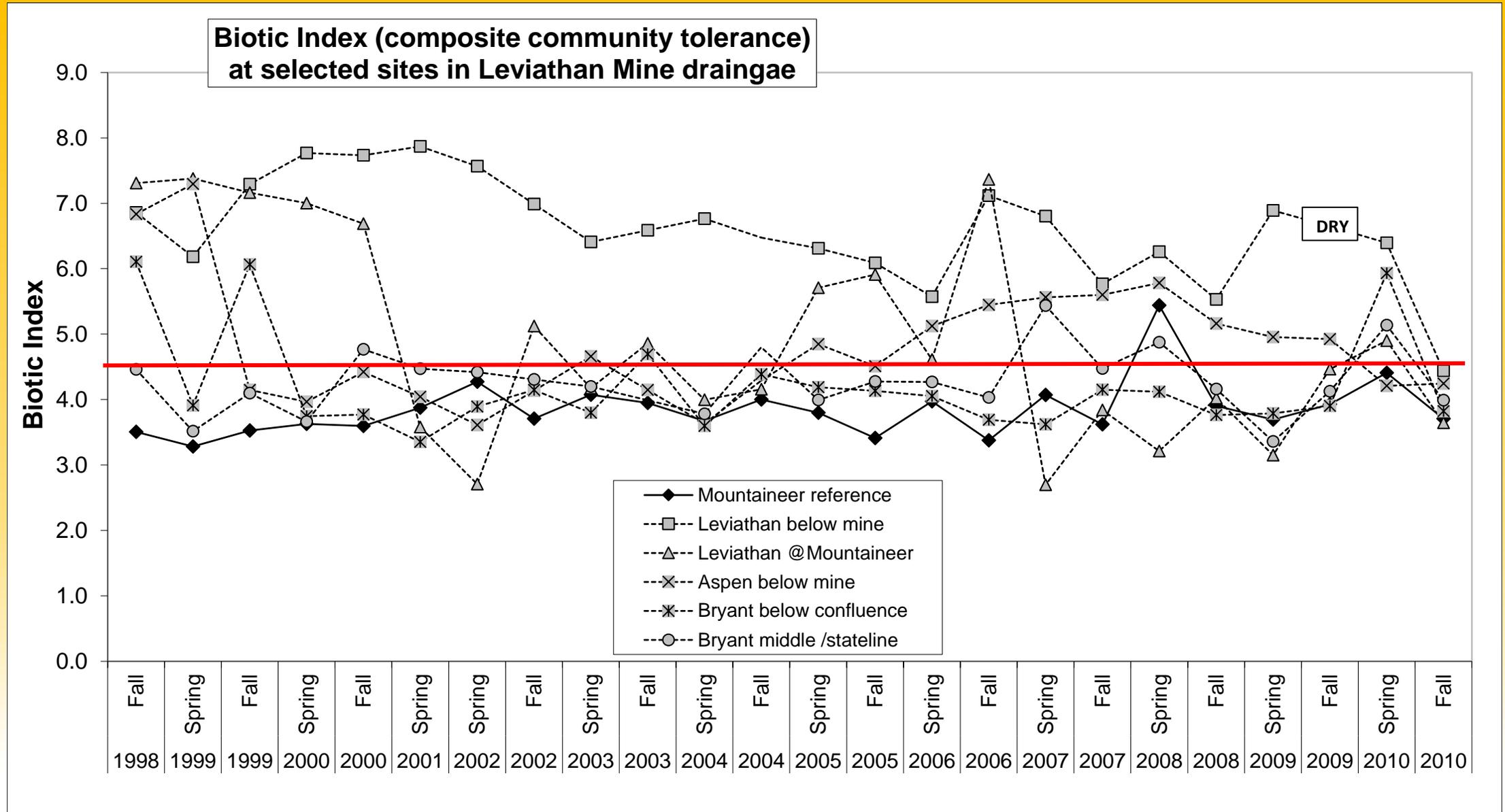
Trends in Mean Taxa Richness 1999-2010



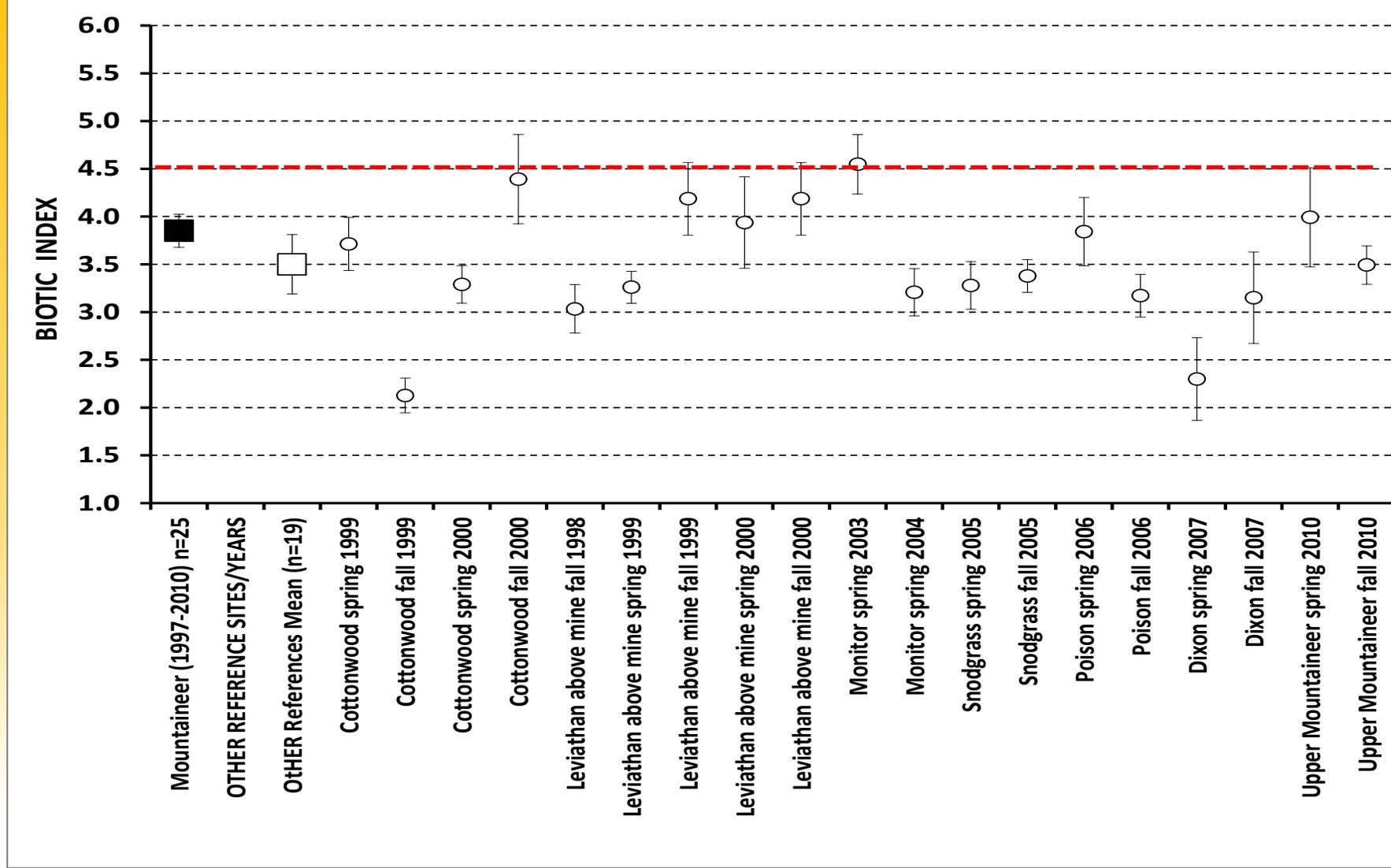
In context of nearby East Carson reference streams matched for size, elevation, geology



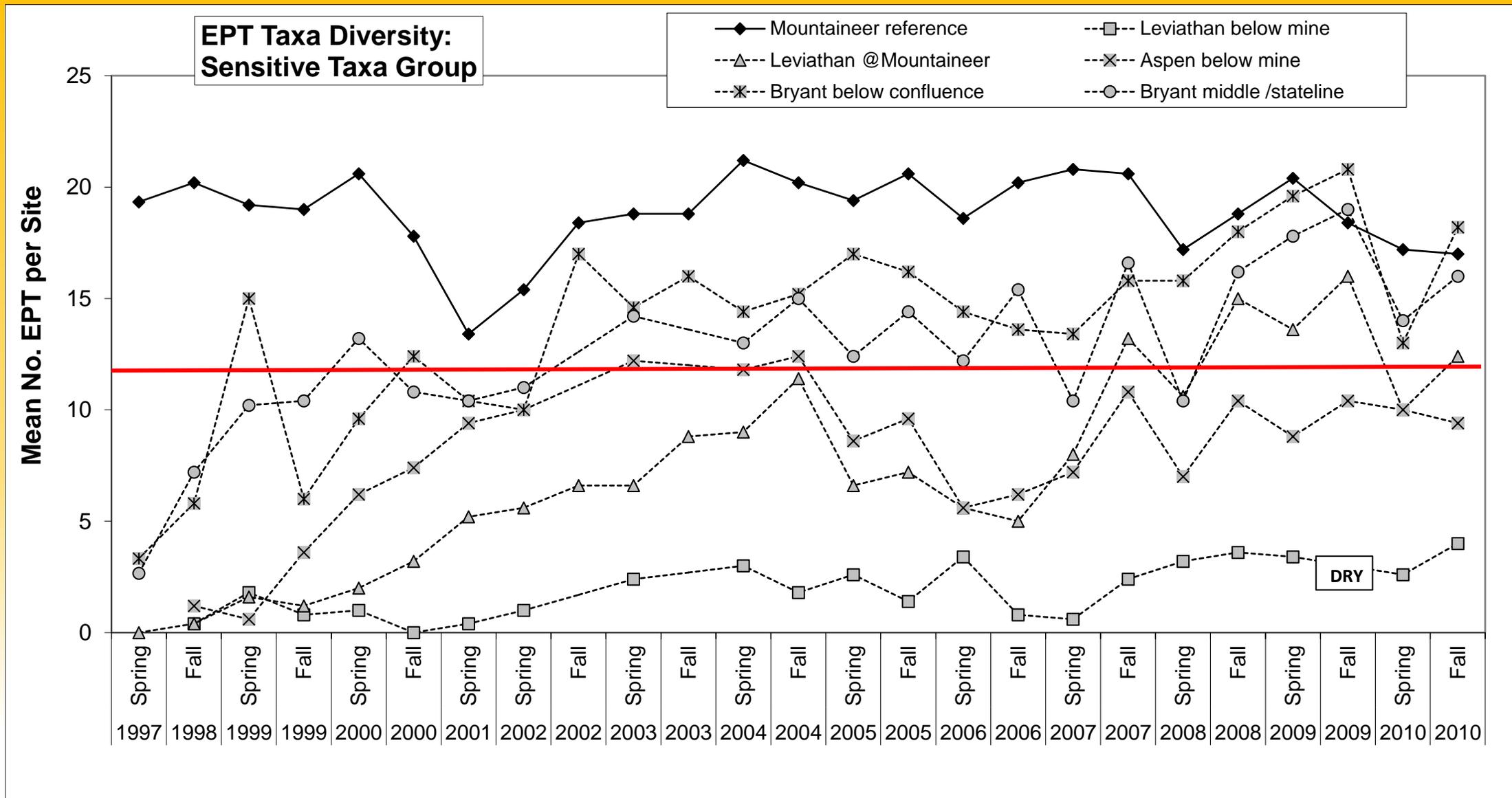
Trends in Biotic Index (community tolerance) 1998-2010



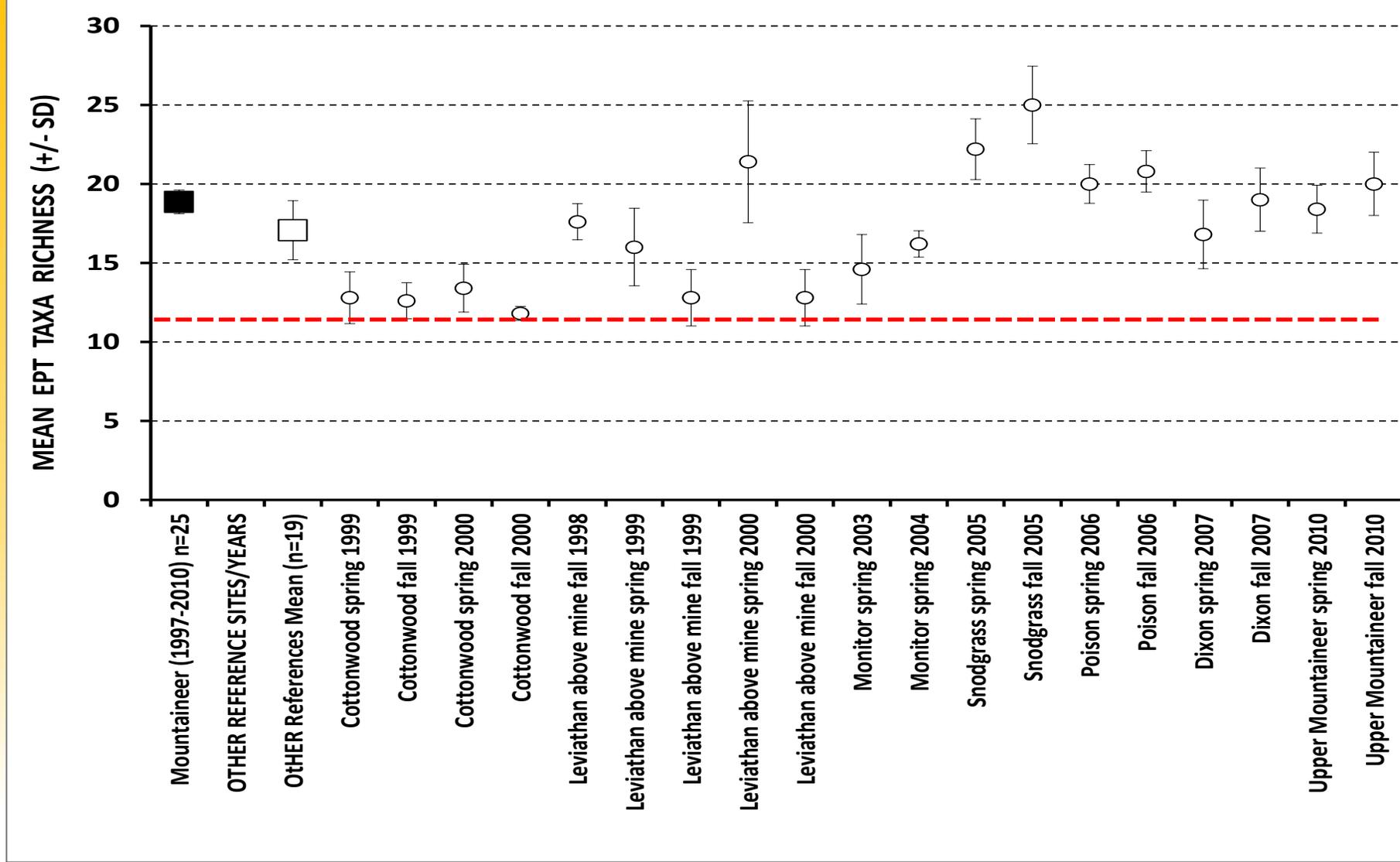
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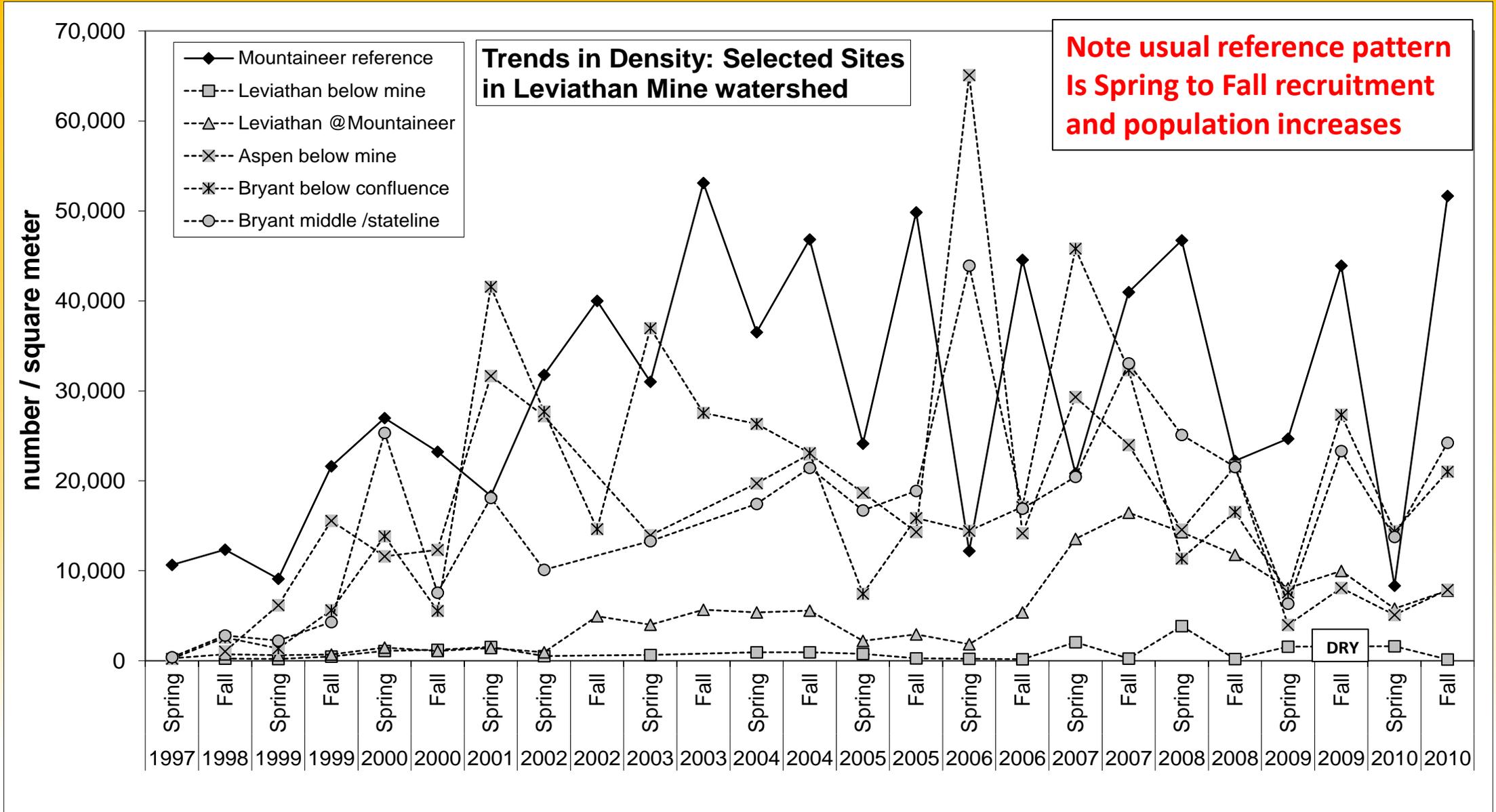
Trends in Mean EPT Richness 1997-2010



In context of nearby East Carson reference streams matched for size, elevation, geology



Trends in Density 1997-2010



Summary 2010

- Showed all but Leviathan above Aspen w > 30 mean total taxa
- Showed all but Leviathan and Aspen w > 12 mean EPT taxa
- Showed all sites with biotic index < 4.5 (less prevalence of tolerant taxa)
- Showed Bryant Crk sites recovering natural population recruitment pattern
- 2011 sample processing and identifications nearly complete and along with data from 2012 will provide important context for natural flow variation effects with 2011 a prolonged high flow year, and 2012 a drought year (report update expected on 2011 within a month)